

CHAPTER 1

INTRODUCTION

1.1 INTRODUCTION

Virtual reality (VR) or Virtual Environments (VE) is designed to emulate the look and feel of being in real environments that user can immerse into an artificial computer-simulated environment. Importantly, virtual environment afford actions - which can form the basis of experimental learning. Virtual environments are rendered on a computer screen, projected onto external surfaces, or experienced with a head mounted display, permitting the user to move about freely in a virtual environment (Waller et al., 2007).

In the used of virtual reality the US military has used virtual reality to train users how to fly planes and simulate how it would feel to jump from a plane. The creation of large-scale virtual environments permits users to engage in (and researchers to study) complex full motor behaviours such as fielding a batted baseball (Fink et al., 2009). Virtual reality helps in training and simulation that requires a lot of time and money to be spent for cheaper and successfully training. In terms of interaction with virtual environments, users can rely on classical devices such as the computer mouse, joystick, and gamepad to act in the virtual space (James

D. et al., 2015). The device can send the data interaction onto the virtual system that enables users freely interact with the system.

Head-mounted display (or helmet-mounted display, for aviation applications), both abbreviated HMD, is a display device, worn on the head or as part of a helmet that has a small display optic in front of one (monocular HMD) or each eye (binocular HMD). A typical HMD has either one or two small displays with lenses and semi-transparent mirrors embedded in a helmet, eyeglasses (also known as data glasses) or visor. In this project the VR is focusing on the HMD, VR headsets or Oculus rift. By using the smartphone that has VR application and attach the smartphone to the VR headsets and the VR application can be seen through the smartphone screen.

Road is a long, narrow stretch with a smoothed or paved surface, made for travelling by motor vehicle, carriage, etc., between two or more points; street or highway (Christine Ammer, 2002). Roads are used to connect one place and another so that the travelling time is faster and smoother. However, because of all people using the same road, the road safety was enforced and it applies on the roads and all the users must follow the laws to make the road safe. The road safety enforcement is used in enforcing the laws that control the use of motor vehicles and the behaviour of drivers, cyclists, pedestrians and other road users.

In this project, the combination of VR and road safety is applied to make a learning aid for the children to give extra understanding about the road safety enforcement. So, using these applications children can learn two things about VR technology and also road safety enforcement.

1.2 OBJECTIVES

The objectives of this project are:

1. To study about the use of Virtual Reality in learning (Road safety).
2. To design and develop Virtual Reality mobile application for road safety.
3. To evaluate the effectiveness of learning road safety using VR application.

1.3 SCOPES

The scopes of this project are:

1. Virtual reality technology using mobile application with virtual reality box and game controller.
2. Learning aid for road safety for kids (6 - 12 year old).
3. Fully interactive 3D VR learning environment.

1.4 PROBLEM STATEMENT

Due to rapid development of smartphone and technology in our country, Virtual Reality seems to be a great platform to be used in learning to increase understanding and performances about road safety that can reduce costs, times and others. Basically, during class, learning processes would be based on books and explanation from teachers. A good student will follow the steps in books correctly and understand the road safety. However, not all students can do that. They need some video tutorials. But the videos only show two-dimensional. Teachers are still using the old method, which is using books and illustrations. By referring to books it will take a long time to study the road safety.